

toluene has greater hindrance of its amine group than said second substituted toluene diamine's amine group.

45 The golf ball according to claim 44 wherein said first diamine substituted toluene is dimethylthio-2,4-toluenediamine.

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46. The golf ball according to claim 44 wherein said second diamine substituted toluene is diethyl-2,4-toluenediamine.

47. The golf ball according to claim 45 wherein said second substituted toluene diamine is diethyl-2,4-toluenediamine.

REMARKS

Applicant appreciates the Examiner's review of the present application and respectfully requests reconsideration and allowance of all claims in light of the following remarks and amendments.

Status of the Claims

Claims 30-33 and 36-47 are pending in the present application.

All claims currently stand rejected. The respondent respectfully traverses the rejection and asks that the claims be allowed based upon the arguments supplied below.

Claims

Claims 30-32, 40, 41, and 43-47 have been amended for purposes of clarification of terminology that the Office found confusing.

Rejection under 35 USC 112, first paragraph

The support for claims 40, 41, and 44-47 can be found in the specification. The claims have been amended to limit the polyol to ether glycols having a molecular weight of about 650-3000, which allows for the excellent durability of the cover. Ether glycols describe structures which one skilled in the art of polyurethane chemistry would easily identify to select a polyol with the proper properties, which is further defined by the limitation of the molecular weight and the ether linkages. Any substantial changes to the ether glycol would then exclude it from being defined as an ether glycol or a polyol and thus it is clearly defined to one skilled in the art of polyurethane chemistry and thus fully supported under 35 USC 112(first paragraph). Further the applicants would like to respond that while PTMEG is a preferred embodiment with superior properties compared to other ether glycols when used, eg. Propylene ether glycols, patent law does not restrict the applicants to only claiming the preferred embodiment when other less desirous but still effective embodiments still fall within the scope of the invention and thus are rightly claimed.

Claims 44-47 were amended to claim only diamine substituted toluene having diamine groups with steric hindrance and without steric hindrance. One skilled in the art of polyurethane chemistry would be able to quickly select without undue experimentation an effective diamine substituted toluene because the group claimed is narrowly described and allows very few variables allowed to have no steric hindrance. The diamine substituted toluene group claimed having steric hindrance further only allows for a small number of variations because of the limited remaining bonding sites on the toluene molecule remaining after the placement of the amines.

In response to the mistaken assertion that adequate support has not been found for the language of claim 44 pertaining to the respective hindrances the applicant direct the examiner to page 10, line 11 of the specification which describes the structure of slow reacting sterically hindered polyamine curing agents and unhindered polyamine curing agents. The claims as amended are fully supported in view of §112(1) and (2) and do not incorporate new matter. Furthermore they describe structures, which are fully supported by the specification and therefore not indefinite. Specifically on page 10, line 11 the specification states:

Slow-reacting polyamines are diamines that have amine groups which are sterically and/or electronically hindered by electron withdrawing groups or bulky groups situated proximate to the amine reaction sites. The spacing of the amine reaction sites will also affect the reactivity speed of the polyamines.

It is well known in the polyurethane and chemical arts the possible chemical structures of non-hindered and hindered diamine substituted toluene.

Rejection under 35 USC 112, second paragraph

Claim 47 has been amended to clarify the confusion of the multiple terminology used to describe PTMEG.

Claim 31 and 32 have been amended to further limit claim 30.

Claims 30-33, 36-39, 42, 43, and 47 have been amended to clarify the confusion of the multiple terminology used to describe PTMEG.

Claim 43 has been amended to clarify the NCO content of the prepolymer.

Rejection of the claims under 35 U.S.C. § 103 (a)

In the communication the Office has rejected claims 30-33 and 36-47 under 35 U.S.C. 103(a) as being unpatentable over Kato (U.S. PAT. 5,704,852) or GB 2301291, each in view of Wu (U.S. PAT. 5,334,673), Isaac (U.S. PAT. 3,989,568) and Presswood (U.S. PAT. 4,631,298). A discussion of the relation of the present invention to the prior art cited follows.

The Teachings of the Kato '852 Patent

With respect to the use of the combination of the Kato core the Office states that the cited disclosure is silent to any motivation to add a polyurethane cover or any related polyurethane chemistry. Thus Kato is silent regarding a polyurethane cover.

The Federal Circuit has stated that “[t]he test for obviousness is not whether the features of one reference may be bodily incorporated into another reference. . . . Rather, we look to see whether combined teachings render the claimed subject matter obvious.” See In re Wood, 599 F.2d 1032, 202 USPQ 171, 174 (C.C.P.A. 1979)(emphasis added) (citing In re Bozek, 416 F.2d 1385, 1390, 163 USPQ 545, 549-50 (C.C.P.A. 1969))

Thus for the Office to form a valid prima facie case of obviousness the teachings of all combined references must teach each and every claimed limitation. With the current amendments the combination cited fails to teach each and every limitation and thus the rejection should be removed.

The Teachings of the GB 2301291A disclosure

With respect to the use of the combination of the GB 2301291A disclosure core the Office states that the cited disclosure is silent to any motivation to add a polyurethane cover or any related polyurethane chemistry. Thus for the Office to form a valid prima facie case of obviousness the teachings of all combined references must teach each and every claimed limitation. With the current amendments the combination cited fails to teach each and every limitation and thus the rejection should be removed.

The Teachings of the Wu ‘673 Patent

The Office contends that Wu discloses the use of prepolymers based on diisocyanates and polytetramethylene ether glycol and a slow reacting

polyamine, such as 3,5-dimethylthio toluene diamine. The applicant responds that while the Wu disclosure teaches using 3,5-dimethylthio toluene diamine it does not teach using another toluene diamine of a faster reaction rate, instead it teaches other structures which provide different properties and processing qualities compared to the instant invention. Further it does not teach each and every claim limitation provided in the disclosure without improperly using hindsight or the applicant's disclosure. Thus for the Office to form a valid prima facie case of obviousness the teachings of all combined references must teach each and every claimed limitation. With the current amendments the combination cited fails to teach each and every limitation and thus the rejection should be removed.

The Teachings of the Isaac '568 Patent

The Office contends that the Isaac patent discloses the use of blends of curative agents having different reactivities that permit a center to be introduced into a semi-cured golf ball cover half, which is then mated with the other half and then cured. The Office then further contends that the use of polyurethanes having controlled reaction profiles and improved properties was known at the time of filing. The applicant respectfully traverses the Office's use of the Isaac disclosure against the instant invention because it fails to provide teaching for each and every limitation either singly or in combination.

The fact that there were controllable reactions of polyurethane cover formulations for golf balls in existence does not bear weight in the 103-

obviousness calculation, only the teaching that is provided. The applicant responds that while the disclosure teaches using curing agents with different reactivities, it does not teach using another toluene diamine of a faster reaction rate, instead it teaches other structures which provide different properties and processing qualities compared to the instant invention. The Isaac disclosure teaches the frozen slab method which has very different processing requirements and properties from the instant invention. The claimed combination of the instant invention producing superior properties is not taught.

Further it does not teach each and every claim limitation provided in the disclosure without improperly using hindsight or the applicant's disclosure. Thus for the Office to form a valid prima facie case of obviousness the teachings of all combined references must teach each and every claimed limitation. With the current amendments the combination cited fails to teach each and every limitation and thus the rejection should be removed.

The Teachings of the Presswood '298 Patent

The Office contends that the aforementioned disclosures in combination with the Presswood '298 disclosure render the instant invention obvious. The applicant contends that the Presswood '298 disclosure does not provide the necessary motivation to combine its teachings with that of the other references provided by the Office. Furthermore the teachings of the Presswood '298 disclosure are incompatible with the other cited references.

The Presswood '298 disclosure teaches the use of polyurethanes used in the RIM process which one could argue is a non-analogous art to the casting process of polyurethanes. However even if one were to try to combine the teachings of the Presswood disclosure it does not teach each and every claim limitation provided in the disclosure without improperly using hindsight or the applicant's disclosure. Thus for the Office to form a valid prima facie case of obviousness the teachings of all combined references must teach each and every claimed limitation. With the current amendments the combination cited fails to teach each and every limitation and thus the rejection should be removed.

MARKED-UP CLAIMS

30 (Thrice Amended) A golf ball comprising:

(a) a core; and
(b) a cover formed by casting having a hardness of 50D to 65D, wherein said cover being a polyurethane formed without the use of catalysts from the reaction products of:

(1) a diisocyanate wherein said diisocyanate is selected from a group consisting of toluene diisocyanate , 4,4'-diphenylmethane diisocyanate, Isophorone diisocyanate and mixtures thereof;

(2) a polyol having a molecular weight of about 650-3000 wherein said polyol is [polytetramethylene glycol] an ether glycol ; and,

(3) a curing agent consisting of:

(A) a first diamine dimethylthio-2,4-toluenediamine; and,

(B) a second diamine diethyl-2,4-toluenediamine.

31. (Amended) The golf ball of claim 30 wherein the diisocyanate is toluene diisocyanate [polyol is an ether glycol].

32. (Amended) The golf ball of claim 30 wherein the diisocyanate is toluene diisocyanate, the polyol is polyoxytetramethylene ether glycol forming a prepolymer having an NCO content of about 6%, which when mixed with the curing agent forms a pot life of 55-70 seconds [is polytetramethylene glycol] .

40. (Amended) A golf ball comprising:

a core comprising a center and thread layer wherein said core has a diameter from about 1.48" to about 1.62"; and,

a polyurethane cover having a hardness of 50D to 65D formed from:

(a) (1) a diisocyanate selected from the group consisting of toluene diisocyanate, 4,4'-diphenylmethane diisocyanate, Isophorone diisocyanate and mixtures thereof, and

(2) [a] an ether glycol polyol having a molecular weight of about 650-3000; and,

(b) a curing agent comprising:

(1) dimethylthio-2,4-toluenediamine; and,

(2) diethyl-2,4-toluenediamine.

41. (Amended) The golf ball of claim 40 wherein the polyol is polyoxytetramethylene [an] ether glycol.

43. (Thrice Amended) A golf ball comprising:

a center comprising 100 PPHR cis polybutadiene rubber, 20 PPHR zinc acrylate salt, 24.5 PPHR barium sulfate, 6 PPHR zinc oxide, 3 PPHR zinc stearate and 2.1 PPHR 1,1-di-(tert-butylperoxy)-3,3,5-trimethyl cyclohexane;

a thread layer winding comprised of polyisoprene rubber [and having a thread size of 0.017" x 5/64"] ; and

a cast cover having a hardness of 50D to 65D comprising the reaction product of 100 PPHR of toluene diisocyanate [when mixed with] and [polytetramethylene] polyoxytetramethylene ether glycol [has] that forms a prepolymer with an [a 6%] NCO content of about 5.5% to 8.0% by weight of said prepolymer , said prepolymer is further reacted with 13.2 PPHR of a curative comprising diethyl-2,4-toluenediamine and dimethylthio-2,4-toluenediamine at a 50:50 weight ratio and 2.3 PPHR pigment so that the overall ball diameter is about 1.68” .

44. (Amended) A golf ball comprising:

(a) a core; and

(b) a cover having a hardness of 50D to 65D, said cover being a polyurethane formed from the reaction products of:

(1) a diisocyanate selected from the group consisting of toluene diisocyanate, 4,4'-diphenylmethane diisocyanate, Isophorone diisocyanate and mixtures thereof;

(2) a polyol having ether groups, wherein said polyol has a molecular weight of about 650-3000; and,

(3) a curing agent comprising:

(A) a first diamine substituted toluene wherein said first diamine substituted toluene has amine groups which are sterically or [electrically] electronically hindered; and,

(B) a second diamine substituted toluene having no interference with its amine group, wherein said first diamine substituted toluene has greater hindrance of its amine group than said second substituted toluene diamine's amine group.

45 (Amended) The golf ball according to claim 44 wherein said first diamine substituted toluene is dimethylthio-2,4-toluenediamine.

46. (Amended) The golf ball according to [either] claim 44 [or 45] wherein said second diamine substituted toluene is diethyl-2,4-toluenediamine.

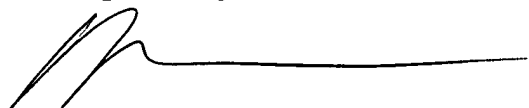
47. (Amended) The golf ball according to claim 45 wherein said second substituted toluene diamine is diethyl-2,4-toluenediamine [the polyol is selected from the group consisting of ether glycol, polytetramethyl glycol and mixtures thereof].

Conclusion

The Office cites a combination of four disclosures, which provides no motivation to produce the instant claimed invention either singly or in combination.

In light of the prior art all claims as written and now amended in the instant invention are allowable. Reconsideration and allowance are respectfully requested.

Respectfully submitted,



Anthony M. Lorusso

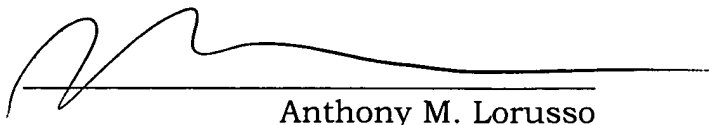
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